Manufactured For MITSUBISHI ELECTRIC US, INC.

INSTALLATION MANUAL

December 2013

LAHK-1, LAHK-2 Low ambient hoods
SWDK-1, RWDK-1 and RWDK-2 Wind deflectors

For use with CITY MULTI® PUHY-P-T/Y(S)KMU, PURY-P-T/Y(S)KMU, and PURY-HP-T/Y(S)KMU Series outdoor units

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For safe and effective use of this kit, please read this installation manual thoroughly before installing these components.

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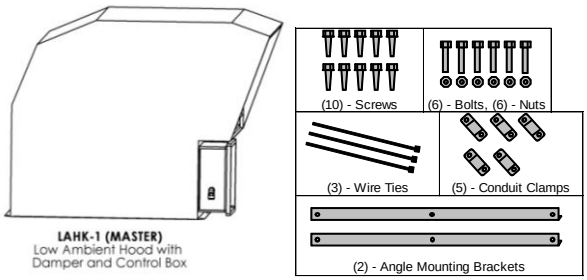
INSPECTING THE SHIPMENT

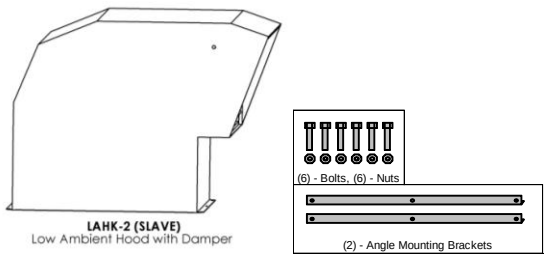
1. Check the unit rating plate to confirm specifications are as ordered.
2. Upon receipt of equipment, carefully inspect it for possible damage. Take special care to examine the unit if the carton is damaged.

If damage is found, it should be noted on the carrier's freight bill. Damage claims should be filed with the carrier immediately. Claims of shortages should be filed with the seller within 5 days.

COMPONENTS INCLUDED IN LAHK-1 KIT


LAHK-1 (MASTER)
Low Ambient Hood with
Damper and Control Box
(10) - Screws
(6) - Bolts, (6) - Nuts
(3) - Wire Ties
(5) - Conduit Clamps
(2) - Angle Mounting Brackets

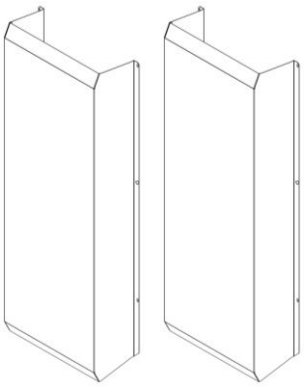
COMPONENTS INCLUDED IN LAHK-2 KIT



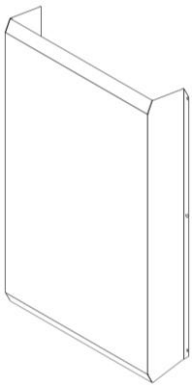
Rear and Side Wind Deflectors

SWDK-1 – Side wind deflectors (2 per kit) 19-1/8" wide
RWDK-1 – Rear wind deflector 32" wide
RWDK-2 – Rear wind deflector 43-7/8" wide

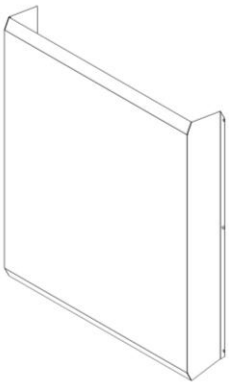
SWDK-1 (2 pieces)



RWDK-1



RWDK-2



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Components Required Per Outdoor Unit

Component selections for models using multiple modules are based on the modules being placed 1 3/16" apart. If modules are placed further than 15" apart, additional SWDK-1 wind deflectors may be required. Also, if multiple models are placed next to each other (less than 15" apart), fewer SWDK-1 wind deflectors may be needed.

Part Number	Description
LAHK-1	Low Ambient Hood Assembly (master) with damper control box For single fan modules ("S" and "L") Also combined with LAHK-2 for larger dual fan modules ("XL")
LAHK-2	Low Ambient Hood Assembly (slave) Combined with the LAHK-1 for double fan ("XL") modules
SWDK-1	Side Wind Deflector, includes 2 pieces (fits all modules)
RWDK-1	Rear Wind Deflector (1 required for "S" module, 2 required for the "XL" module)
RWDK-2	Rear Wind Deflector (1 required for "L" module)

PUHY-P-T/Y(S)KMU Series

Unit model	Module Size			Component Quantity				
	S	L	XL	LAHK-1	LAHK-2	SWDK-1	RWDK-1	RWDK-2
PUHY-P72(T,Y)KMU-A	1			1		1	1	
PUHY-P96(T,Y)KMU-A		1		1		1		1
PUHY-P120(T,Y)KMU-A			1	1	1	1	2	
PUHY-P144(T,Y)KMU-A			1	1	1	1	2	
PUHY-P144YSKMU-A	2			2		1	2	
PUHY-P168(T,Y)SKMU-A	1	1		2		1	1	1
PUHY-P192(T,Y)SKMU-A	1		1	2	1	1	3	
PUHY-P216(T,Y)SKMU-A		1	1	2	1	1	2	1
PUHY-P240(T,Y)SKMU-A			2	2	2	1	4	
PUHY-P264(T,Y)SKMU-A	2		1	3	1	1	4	
PUHY-P288(T,Y)SKMU-A	1	1	1	3	1	1	3	1

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PURY-P-T/Y(S)KMU Series

Unit model	Module Size			Component Quantity				
	S	L	XL	LAHK-1	LAHK-2	SWDK-1	RWDK-1	RWDK-2
PURY-P72(T,Y)KMU-A		1		1		1		1
PURY-P96(T,Y)KMU-A		1		1		1		1
PURY-P120(T,Y)KMU-A			1	1	1	1	2	
PURY-P144(T,Y)KMU-A			1	1	1	1	2	
PURY-P144YSKMU-A		2		2		1		2
PURY-P168(T,Y)SKMU-A		2		2		1		2
PURY-P192(T,Y)SKMU-A		2		2		1		2
PURY-P216(T,Y)SKMU-A		1	1	2	1	1	2	1
PURY-P240(T,Y)SKMU-A			2	2	2	1	4	
PURY-P264(T,Y)SKMU-A			2	2	2	1	4	
PUHY-P312(T,Y)SKMU-A	1		2	3	2	1	5	
PUHY-P336(T,Y)SKMU-A		1	2	3	2	1	4	1
PUHY-P360(T,Y)SKMU-A			3	3	3	1	6	1

PURY-HP-T(S)KMU Series

Unit model	Module Size			Component Quantity				
	S	L	XL	LAHK-1	LAHK-2	SWDK-1	RWDK-1	RWDK-2
PURY-HP72TKMU-A-H		1		1		1		1
PURY-HP96TKMU-A-H		1		1		1		1
PURY-HP144TSKMU-A-H		2		2		1		2
PURY-HP192TSKMU-A-H		2		2		1		2

PURY-HP-Y(S)KMU Series

Unit model	Module Size			Component Quantity				
	S	L	XL	LAHK-1	LAHK-2	SWDK-1	RWDK-1	RWDK-2
PURY-HP72YKMU-A		1		1		1		1
PURY-HP96YKMU-A		1		1		1		1
PURY-HP144YSKMU-A		2		2		1		2
PURY-HP192YSKMU-A		2		2		1		2

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Safety Precautions

- **Before installation and electric work**

Before installing the unit, make sure you read all the "Safety precautions".

The "Safety precautions" provide very important points regarding safety. Make sure you follow them.

- **Symbols used in the text**

⚠ **Warning:**
Describes precautions that should be observed to prevent danger of injury or death to the user

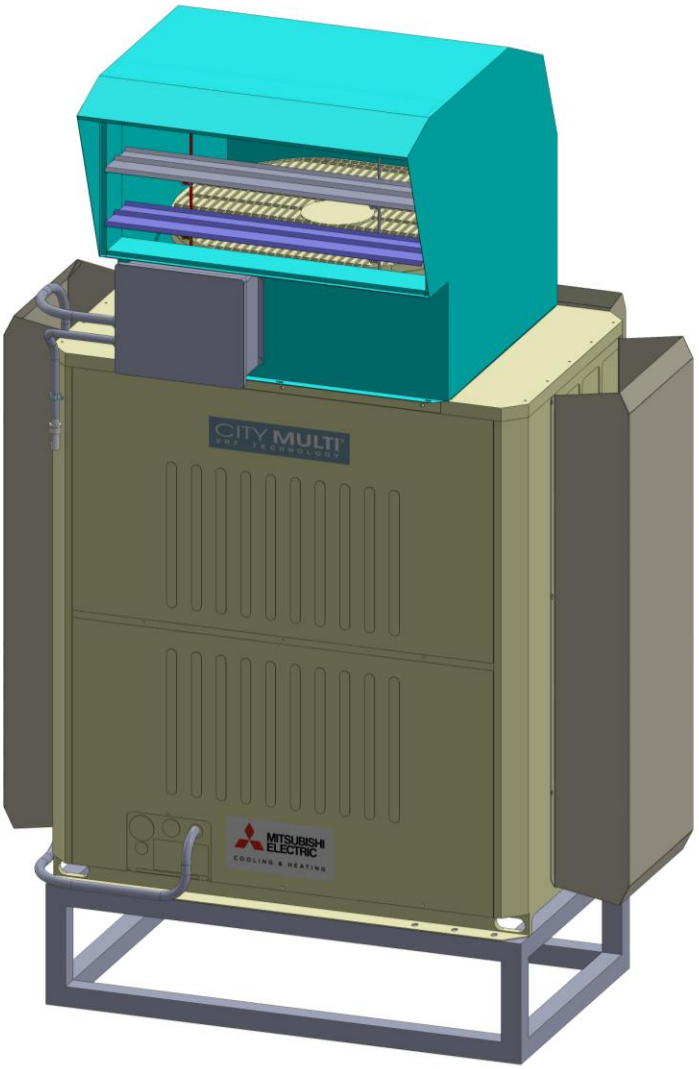
⚠ **Caution:**
Describes precautions that should be observed to prevent damage to the unit

⚠ **Warning:**
Carefully read the labels affixed to the main unit.

⚠ **Warning:**

- **This kit must be installed by an authorized Dealer or properly trained technician.**
  - Improper installation by the user may result in water leakage, electric shock, or fire.
- **Use the specified cables for wiring. Make the connections securely so that the outside force of the cable is not applied to the terminals.**
  - Inadequate connection and fastening may generate heat and cause a fire.
- **Prepare for typhoons, hurricanes, earthquakes etc. and install the unit at the specified place.**
  - Improper installation may cause the unit to topple and result in injury.
- **Never repair the unit. If the air conditioner must be repaired, consult the dealer.**
  - If the unit is repaired improperly, water leakage, electric shock, or fire may result.
- **Do not touch the heat exchanger fins.**
  - Improper handling may result in injury**.**
- **When handling the product, always wear protective equipment.**
  - EG: Gloves, full arm protection, and safety glasses.
  - Improper handling may result in injury.
  - If the unit is installed improperly, water leakage, electric shock, or fire may result.
- **Have all electric work done by a licensed electrician according to the "National Electrical code and local Electrical codes" and "Interior Wire Regulations" and the instructions given in this manual and always use a special circuit.**
  - If the power source capacity is inadequate or electric work is performed improperly, electric shock and fire may result.
- **Do not reconstruct or change the settings of the protections devices.**
  - If the pressure switch, thermal switch, or other protection devices are shorted and operated forcibly, or parts other than those specified by Mitsubishi Electric are used, fire or explosion may result.

⚠ Warning:
Before attempting installation or service work disconnect all power to this equipment



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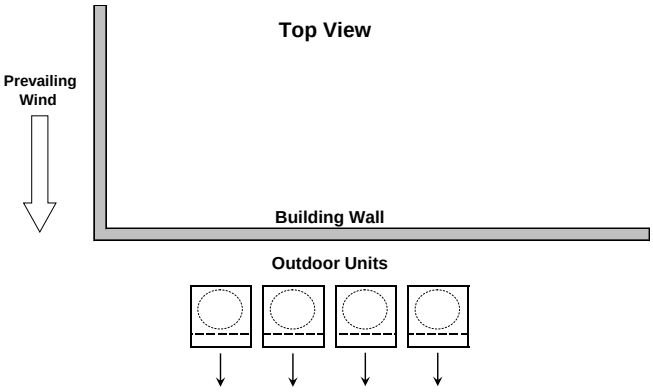
Unit Placement and Clearances

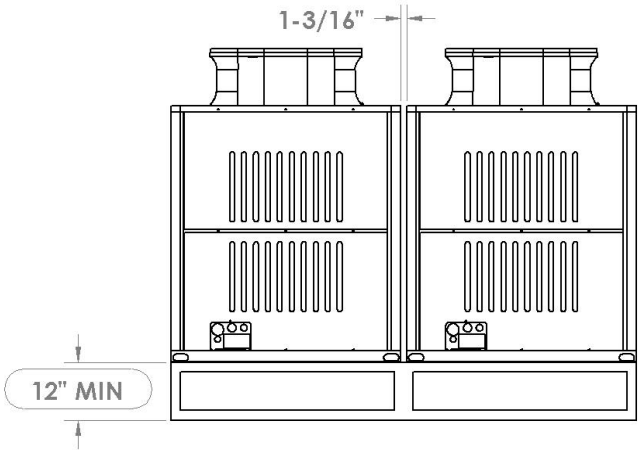
Outdoor units should be located in an area protected from prevailing winds. (Shown below)

In high wind locations it may be advisable to locate the units within a walled area.

Hood discharge should be directed away from or perpendicular to the prevailing winds. ***Never toward.***

When using the low ambient components, add an additional 8" to the standard mounting clearances.

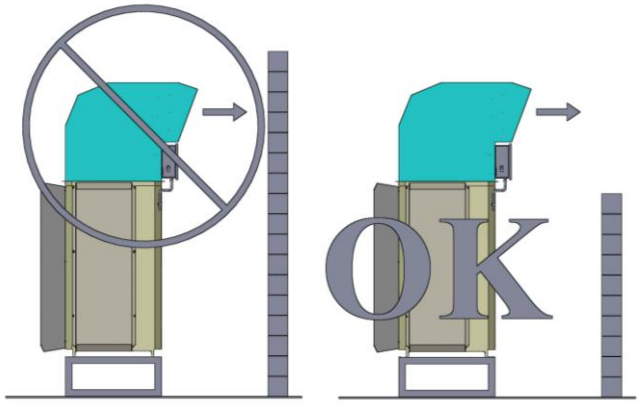




IMPORTANT!

The equipment supports must elevate the unit at least 12" above the maximum expected snow depth or 12" above the ground, whichever is higher. The equipment supports must be an open construction to minimize snow drifting and/or ice formation during defrost.

If the units are surrounded by an enclosure, the discharge of the hood must direct the air out and over the enclosure walls to prevent air recirculation.



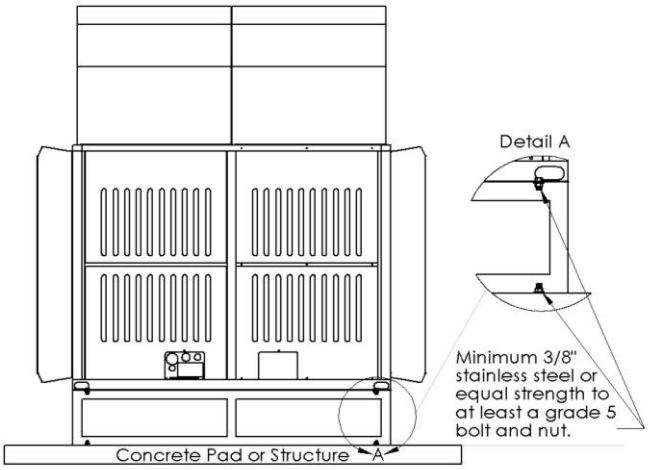
IMPORTANT!

If the unit is located in an area with continuous high winds, the unit may require additional bracing. Contact your local Distributor for assistance.

Equipment Supports

When modules are combined they should be placed the minimum 1-3/16" apart. By doing so only one set of side wind deflectors (SWDK-1) are required per group of modules.

The equipment support must be firmly attached to the ground or structure. The outdoor unit must be properly attached to this equipment support with 3/8" stainless steel or equal strength to at least a grade 5 bolt.



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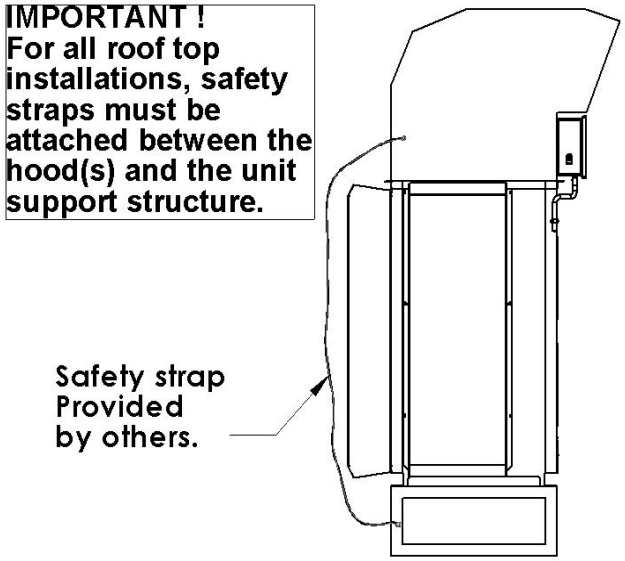
Additional Rooftop Mounting Guidelines

The preferred mounting location for the outdoor units with a low ambient kit is on the ground. However, if this is not possible follow all additional installation guidelines when rooftop mounting. If you have any questions, please consult your distributor.

IMPORTANT!
The low ambient hood(s) increase the overall height of the units and therefore make them more susceptible to wind stresses. Follow all guidelines when using these on rooftop applications

Outdoor units should be located in an area protected from prevailing winds.
Hood discharge should be directed away from or perpendicular to the prevailing winds. ***Never toward prevailing winds.***
When using the low ambient components, add an additional 8" to the standard mounting clearances.

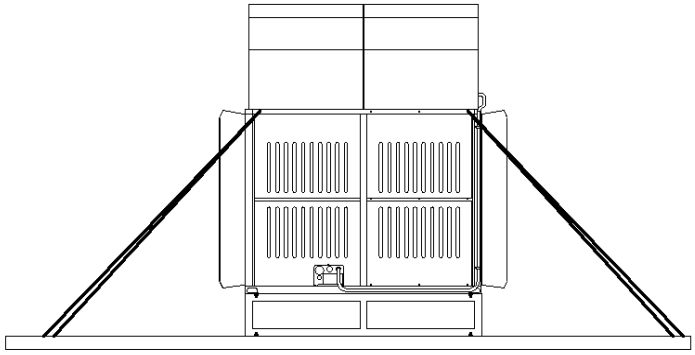
IMPORTANT
For all roof top installations, safety straps must be attached between the hood(s) and the equipment support structure. Straps should be a minimum 3/16" vinyl coated cable.


IMPORTANT !
For all roof top installations, safety straps must be attached between the hood(s) and the unit support structure.
Safety strap Provided by others.

Straps must be attached to the hood where they will not interfere with the movement of the dampers. Attachment to both the hood and mounting structure is to be with a bolt through connection using a bolt ¼" or larger in diameter.

The outdoor unit and equipment support should be firmly attached to the structure.
Or, if the equipment support is the type that does not attach to the structure, refer to the equipment support manufacturer's guidelines for proper size and construction.

Depending on location, exposure and other factors influencing the wind, Additional support (or cables) may be required such as shown below. Contact your distributor for assistance.



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Installing the Discharge Hood(s)

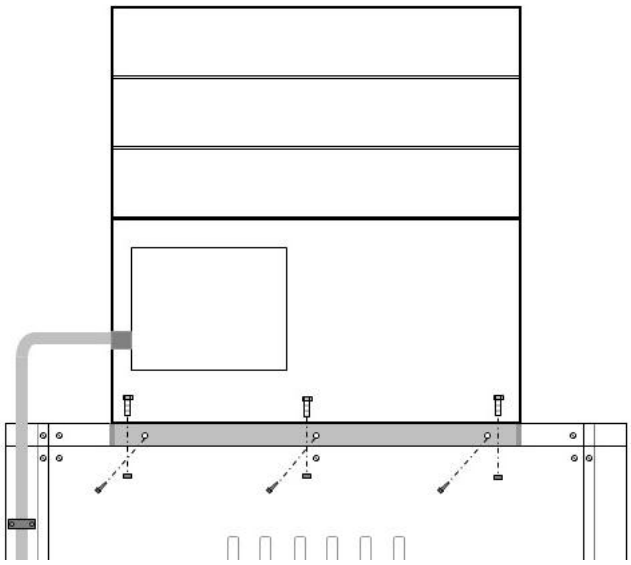
⚠ Warning:
Because of component weight, hood requires 2 people lift it into place

- Once the discharge direction (towards the front or rear of the unit) has been determined follow the steps below to install the hood(s).

- The kit comes with two angle brackets, bolts and nuts to secure the hood in place.

STEPS:

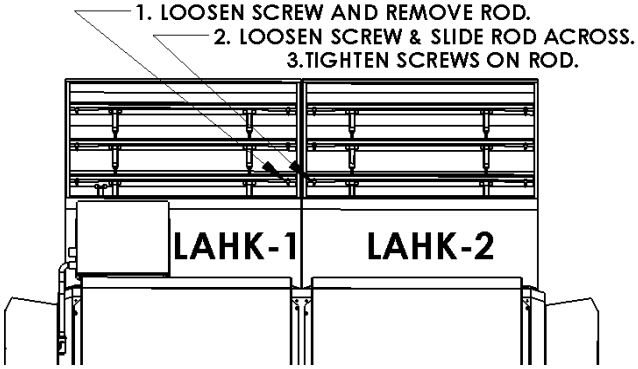
1. Lift the hood up over the fan guard and set in place.
2. Remove the three center screws on the top front and back of the unit as shown below.
3. Using these same screws attach the angle brackets under the hood flange.
4. With the 6 nuts and bolts provided attach the hood flange to the bracket as shown.
5. Securely tighten all bolts, nuts and screws.



- **Connecting the LAHK-1 and LAHK-2 hoods when installing on a 2 fan module.**
- **Once the hoods are secured in place on the unit with the dampers in the full open position (as shipped). Follow these steps.**

STEPS:

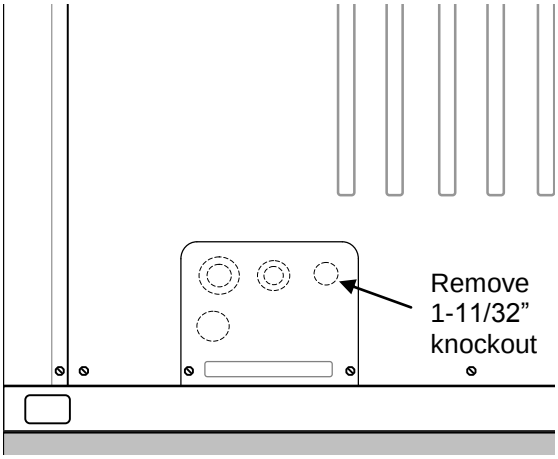
1. Loosen the set screw securing the bottom right *damper* rod on LAHK-1 hood. Slide out and remove the *damper* rod.
2. Loosen the set screw securing the bottom left *damper* rod on LAHK-2 hood. Slide the *damper* rod out and into the opening on the side of the LAHK-1 hood. Align rod behind both set screws.
3. Align the dampers in the two hoods and tighten both set screws on to the *damper* rod.



Making the Electrical Connections

⚠ Warning:
Before attempting installation or service work disconnect all power to this equipment

- Remove the 1-11/32” knockout on the wiring entry panel on the bottom front of the unit as shown below.



- The flexible conduit can be routed along the front corner panel of the unit as shown. The direction of hood discharge will determine which side to run the conduit. (refer to the following steps)

- ***Remove the White connector assembly from the end of the harness by unplugging the two red wire spade terminal disconnects.***

- ***Remove the nut and one of the conduit reducer halves from the conduit connector prior to running the wires through the wiring entry panel knockout.***

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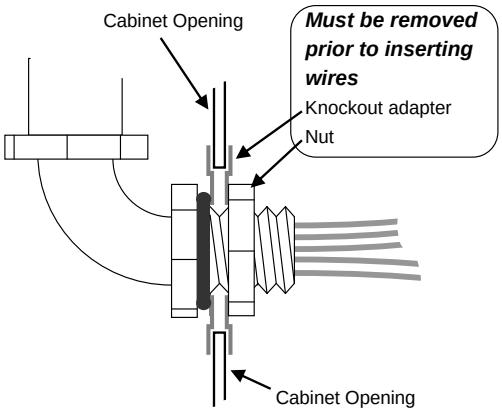
- Carefully insert the wires through the opening in the wiring entry panel. Replace the conduit reducer and the connector nut and tighten securely. Refer to the drawing below for reference.

- ***Replace the White connector assembly on the end of the harness by plugging the two red wire spade terminal disconnects together.***

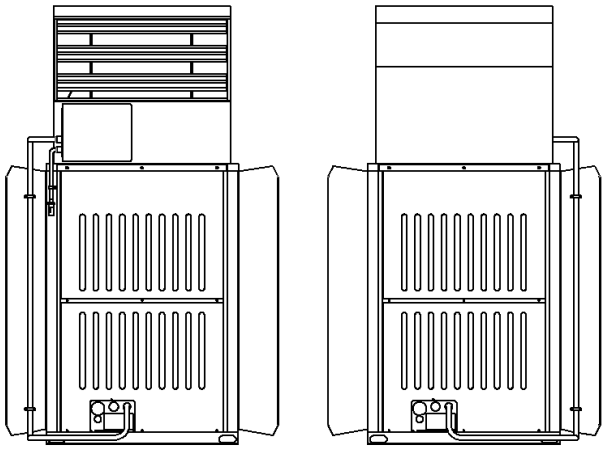


The Conduit should be attached with the conduit clamps and screws provided as shown in the following sets of drawings. Front and rear routing location will be the same method when LAHK-1 and LAHK-2 hoods are used in combination on the dual fan modules.

IMPORTANT: Only install conduit clamps on the corner panel as shown or on the wind deflectors. Attaching in other locations risks puncturing the unit internal piping resulting in a leak and loss of refrigerant charge

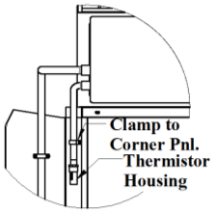
- For front discharge, the conduit should run along the left hand side.
- For rear discharge, the conduit should run along the right hand side.

FRONT DISCHARGE **REAR DISHARGE**

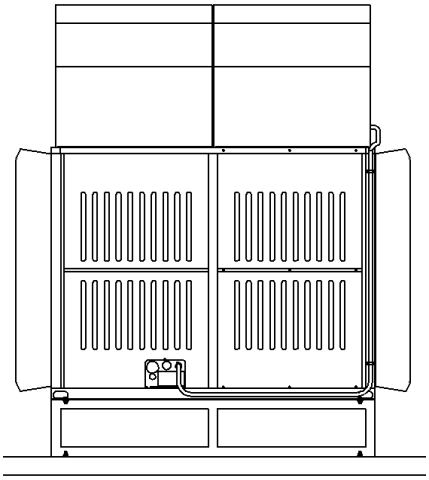


- The 24" conduit with the Thermistor housing at the end should be attached with the supplied clamp to the corner panel as shown in the detail.

DETAIL

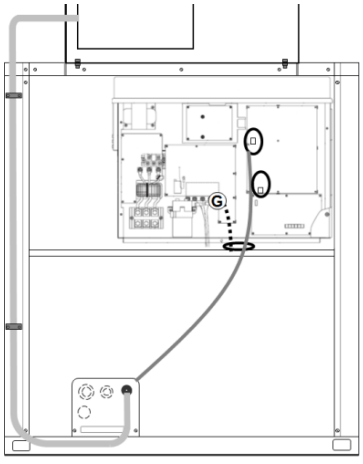


REAR DISHARGE "XL" MODULE



- Using the conduit clamps and screws provided securely attach the conduit as shown in the drawings.
- Depending on the discharge direction, there may be excess conduit length. This can be coiled and secured to the wind deflector with one of the conduit clamps.
- Once the conduit is secured in place route the wires up through the bottom compartment and into the top section of the unit. The wires will connect to the main control board as shown in the diagram below.

IMPORTANT: Avoid contact between the wires and any refrigerant piping inside the cabinet. If necessary, use wires ties included with the kit to secure away from refrigerant piping.



- Follow the steps shown in the following diagram for completing the wiring of the kit

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⚠ Warning:
Before attempting installation or service work disconnect all power to this equipment

MAKE SURE POWER SUPPLY TO THE UNIT IS OFF BEFORE PROCEEDING

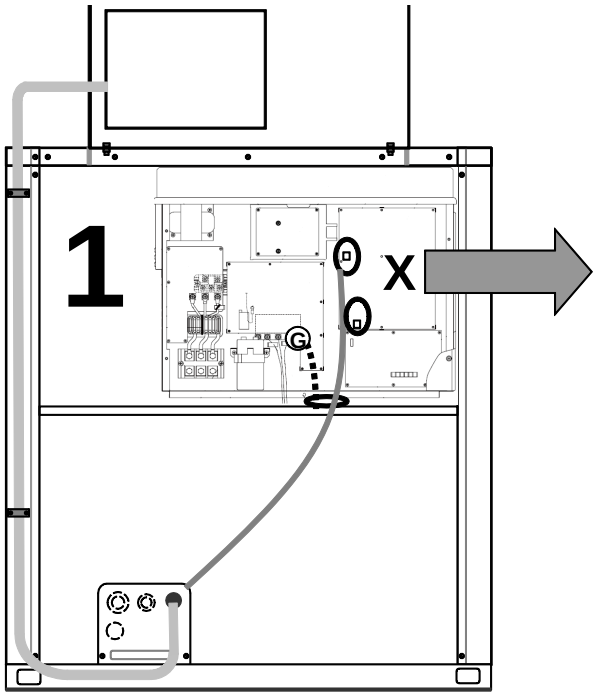
Step 1 Run the wires into the upper panel controls compartment.
Connect ground wire (dotted line) to green ground lug **"G"** inside the control box.
Locate the main PC board marked with an **"X"**

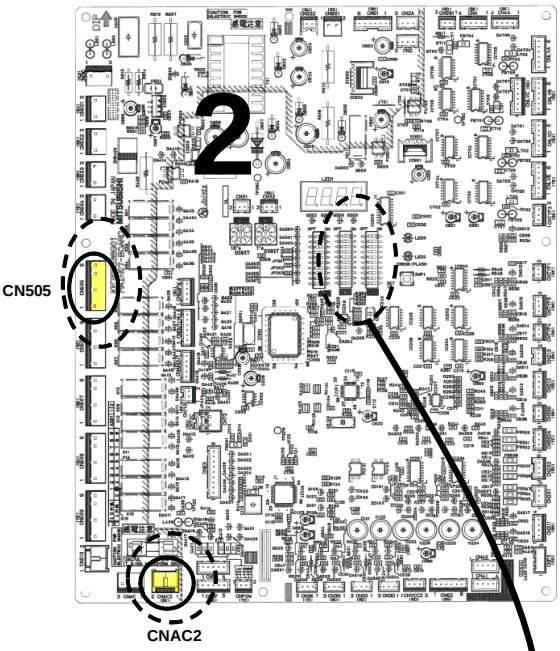
Step 2 Locate CNAC2 and CN505 connections on the PCB

Step 3 Follow the connection instructions on the diagram below.

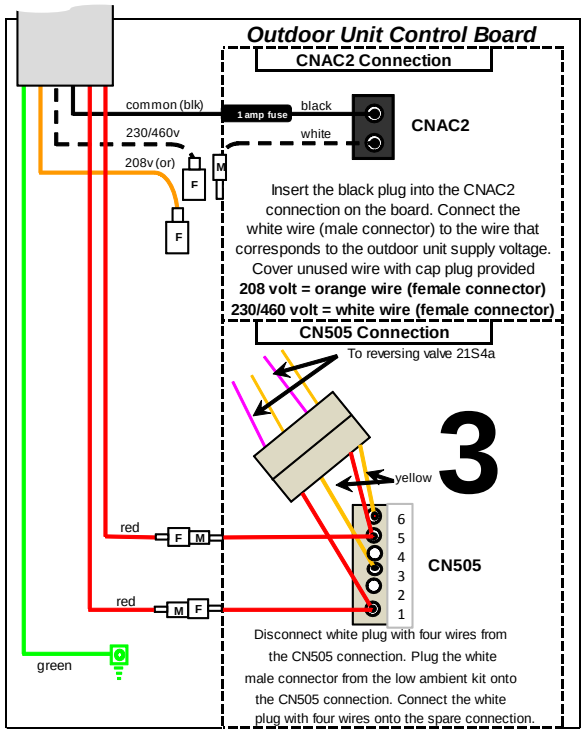
Step 4 Change DIP switch SW6-4 and SW6-5 to ON for 0.12 esp fan operation

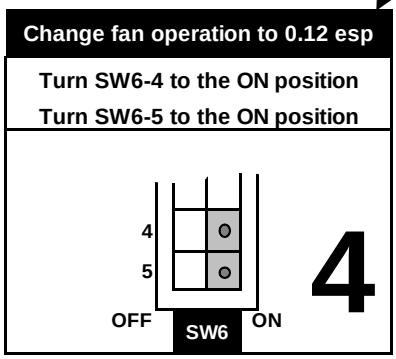
Secure any extra or loose wires with wire tie straps provided.





Make connections as shown


Outdoor Unit Control Board
CNAC2 Connection
common (blk)
1 amp fuse
black
white
CNAC2
230/460v
208v (or)
F
M
Insert the black plug into the CNAC2 connection on the board. Connect the white wire (male connector) to the wire that corresponds to the outdoor unit supply voltage. Cover unused wire with cap plug provided
208 volt = orange wire (female connector)
230/460 volt = white wire (female connector)
CN505 Connection
To reversing valve 21S4a
3
yellow
red
red
green
6
5
4
3
2
1
CN505
Disconnect white plug with four wires from the CN505 connection. Plug the white male connector from the low ambient kit onto the CN505 connection. Connect the white plug with four wires onto the spare connection.



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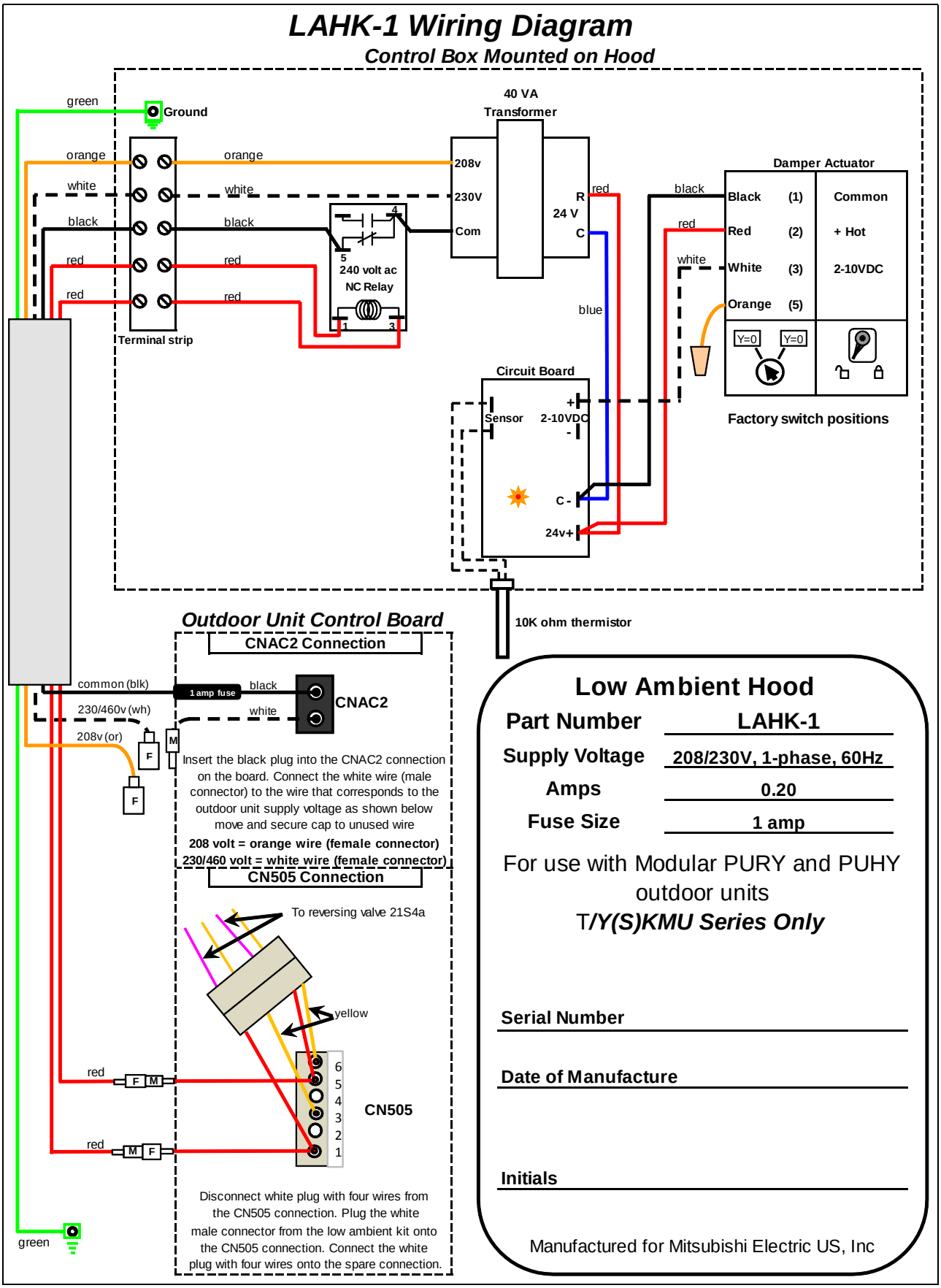
WIRING DIAGRAM



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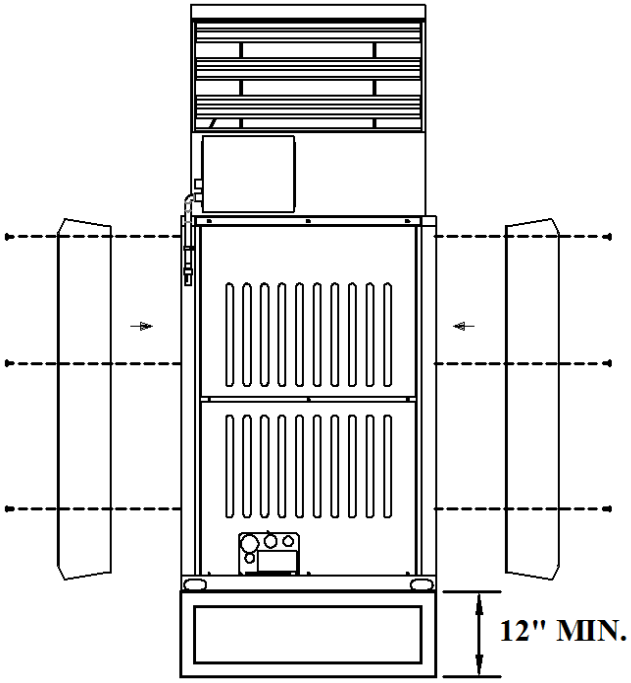
Installing the Wind Deflectors
Part #SWDK-1, RWDK-1 and RWDK-2

IMPORTANT!
The equipment supports must elevate the unit at least 12" above the maximum expected snow depth or 12" above the ground. Whichever is higher. The equipment supports should be an open design to minimize snow drifting and or ice forming during defrost.

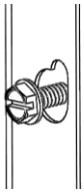


STEPS:

1. Remove rear wire guard(s) from unit and discard. **Retain screws for rear RWDK wind deflector installation**. Remove two top screws from side of unit and retain, use these and 4 provided screws for SWDK-1 side deflector installation.

AVOID TOUCHING OR DAMAGING COIL SURFACE!

2. Install the center screws part way first and then hang the wind deflector over the coil.



3. Install remaining screws and tighten all 6 screws securely. Repeat with all wind deflectors.

Operational Test

Outdoor unit must be in cooling mode.

All hoods and damper controls are tested at the factory before shipping. To perform an operational test once the installation has been completed, follow the steps below.
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Operation testing when the outdoor ambient is ABOVE 50°F

1. Turn on power to the outdoor unit.
2. Make sure the outdoor unit is in **cooling** mode.
3. Locate the outdoor temperature sensing thermistor at the end of the short conduit coming out the side of the control panel, it can be seen inside the plastic shield.
4. Using an aerosol dusting sprayer, invert the can and spray the thermistor with very short bursts of the cold liquid***. Caution! Do Not overspray the thermistor as it could be damaged. It may take 10 – 20 seconds for the internal thermistor temperature to drop.*** The damper will start to move toward the closed position after the thermistor drops below 50°F
5. Once the thermistor warms above 50°F, it will move back to the full open position indicating the low ambient kit is working as designed.

Operation testing when the outdoor ambient is BELOW 50°F

1. Turn on power to the outdoor unit.
2. Make sure the outdoor unit is in **cooling** mode.
3. The damper will move toward the closed position to a predetermined position based on the outdoor ambient temperature indicating the low ambient kit is working as designed.

If either of the tests above fails, please check all electrical connections according to the previous installation instructions and test again. If the unit still does not test correctly, contact your Mitsubishi Distributor

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